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ABSTRACT

A study was conducted to test whether quantitative feedback would help students write with the stylistic simplicity appropriate to their audience and purpose without sacrificing other elements of good writing. Two business and technical writing classes received identical reading assignments, classroom activities, and writing assignments; but one class got feedback on their writing from a computerized readability formula, the Simplified Test Approach for Readability (STAR), which was based on the Flesch readability formula. Five assignments were tested in all, and a nine-point scale was used to assess appropriateness of stylistic simplicity. The results were suggestive but not conclusive. The overall achievement of students in the STAR group correlated more positively with scores on the stylistic simplicity scale than did the achievement of students in the control group. However, the control group scores on the stylistic simplicity scale were not highly predictive of overall achievement. That is, the control group students may have mastered stylistic simplicity, but their learning did not consistently correlate with overall achievement. Further analysis suggested that feedback to students about grade level equivalents in readability may have accounted for the relation of overall achievement to stylistic simplicity. (RL)

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Teaching Stylistic Simplicity with a Computerized Readability Formula*

Organizations recognize the need for clear writing with stylistic simplicity appropriate to the audience and purpose of the writing. Business executives cite "clarity and simplicity" as the most desirable qualities for college writing courses to teach future employees.[1] And recent federal and state legislation requiring simple, clear language in consumer documents emphasize the need for clear writing to audiences outside the organization.[2]

But teaching students in business writing courses to write consistently with appropriate stylistic simplicity is no easy task. The traditional combination of reading assignments, analysis of samples, and correction of assignments often makes only a fleeting impact on student writing. This paper reports on an experiment using traditional methods with two classes, with students in one class also getting immediate quantitative feedback on the stylistic difficulty of their writing from a computerized readability formula. I set out to test whether quantitative feedback would help students write with stylistic simplicity appropriate to their audience and purpose without sacrificing other elements of good writing: quality of ideas, completeness and relevance of information, clarity of logic and organization, and appropriateness of tone. This paper reports on the results of that experiment.

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Experimental design

To test this hypothesis, I taught two daytime sections of business and technical writing (English 382) at Oakland University during Winter Semester 1980. The reading assignments, classroom activities and writing assignments were identical, except that one class got feedback on their writing from a computerized readability formula. No reliable, finely calibrated test for readability currently exists. But reliable rough estimates are available through readability formulas. Such formulas provide a scale, but not an evaluation--of appropriateness, of grammar, content or usage. Therefore, it was crucial to add the instructor's qualitative comments to the quantitative feedback from the computer. The computer program used (called "star" for Simplified Test Approach for Readability) was developed and shared by the GM Service Research Division (as modified by the Oakland County Schools). The program, based on the most widely used readability formula, developed by Rudolf Flesch, calculates the simplicity of a passage on the basis of average word length (in syllables) and average sentence length.[3] Flesch's formula gives a rough but reliable assessment of reading ease by computing the lowest grade level of education a reader would need to understand the passage tested. This grade level equivalent (gle) provided the quantitative feedback to the students in the class using the "star" program.

Five assignments were tested in all. The first assignment was used as a pre-test, so no students got gle results on that assignment. The actual information in the assignments was student-generated (with the exception of the third assignment) to fulfill the writing situations I defined:

1st--pre-test: a letter of application for a job

2nd--a definition for a specific audience
(emphasis on simplicity and clarity)

3rd--a complete rewrite of a persuasive memo
(emphasis on tone, logic and simplicity)

4th--memo to audience with potentially conflicting interests
(emphasis on objectivity, completeness and tone)

5th--memo using a table or graph
(emphasis on creation and use of graphics)

To test my hypothesis whether "star" could help teach appropriate stylistic simplicity without sacrificing other good qualities of writing, I needed a reliable measure for appropriateness of style and of overall achievement. Grades on individual assignments have been used to judge the overall quality of writing. But gle is inadequate for judging the appropriateness of style for several reasons:

1. Gle alone cannot measure what stylistic simplicity is <u>appropriate</u> for a particular audience and purpose. Most people prefer a simpler writing style (even ninth grade level) unless they are experts reading highly technical material.[4] And even when the reader's educational level seems to provide a least common denominator, it is not clear how much an adult's interest and familiarity with the topic can increase reading level. (Note: most readability formulas have been validated only with testing of school children.)[5]
2. Readability formulas measure <u>indexes</u> of comprehension (average word length and sentence length) but cannot

test for causes of confusion due to faulty grammar, spelling and sentence structure.

3. Punctuation errors can artificially lower or raise gle.

Therefore, to assess appropriateness of stylistic simplicity, a nine-point scale has been used ranging from -1 (too simple/inaccurate) to 0 (appropriate) to +1 (too complex). Thus, two important kinds of data are based on the instructor's evaluation--grades on assignments (assessed during the semester) and simplicity scale (ss) ratings (assessed after the end of the semester). In this preliminary study, I chose these data as the best indicators available, despite possible subjectivity.

A minus ss rating (-1, -.75, -5, -25) was assessed for errors of sentence structure (comma splice, run-on sentence, fragment), lack of transition and errors in grammar, word usage, punctuation and spelling. A plus ss rating (+1, .75, .5, .25) was assessed for overly complex sentence structure or unnecessarily pretentious or abstract vocabulary.

After the pre-test, students could use the "star" program at any time. However, some students could not type well, and they could not always get ready access to a terminal. After the third assignment, I no longer required students to use "star" personally; for those who did not use "star", I had the texts tested and returned gles to the students within a week.

Results

The results of the experiment are suggestive, but not conclusive. The overall achievement of students in the "star" group correlated

more positively with ss scores than with the control group not using "star." That is, if "star" students did well overall, they did well on stylistic simplicity; if they did poorly overall, they did poorly on ss (whether their style was too complex or too simple). But with the control group, ss scores were not highly predictive of overall achievement (measured by an average of grades on the five assignments). A regression equation was run to see to what extent various factors were important in predicting overall achievement and how important each factor was. With a regression equation, the effect of the higher grade point averages of the control class could be eliminated as a consideration, thus making the two groups more nearly equal for statistical purposes.

The regression equation tested the significance for overall achievement (average for five assignments) of the following seven variables: grade point average (gpa), "star" participation, and stylistic/simplicity (ss) rating on five assignments. The results are listed in Table I below:

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Table I here

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These seven variables accounted for 50.6% of the overall achievement (adjusted for degrees of freedom). Three of these variables were statistically significant because <u>both</u> stressed simplicity, and assignment 3 required all students to revise the same passage. Assignments four and five stressed different goals and involved greater student choice of material, while assignment one was the pre-test before discussion of stylistic simplicity or use of "star."

A regression equation for each group separately shows some interesting differences between the classes (results shown in Table II).

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Table II here

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Although the t-ratios for the star group are not significant (.05 level) in statistical terms, the t-ratios on ss after the pre-test are suggestive of significance except for ss4. And the total group of variables predicts 59% of the independent variable (average on five assignments).

In contrast, the t-ratios of ss scores for the control group fluctuate much more than with the "star" group, and the six factors tested predict only 14.6% of grade. That is, the control group students may have mastered stylistic simplicity or not, but their learning does not consistently correlate with overall achievement. Or, to put it another way, the data do not suggest that mastery of stylistic simplicity resulted from class activity in the control group.

Further analysis suggests that feedback to students about gle may account for the relation of overall achievement to stylistic simplicity. Making the ss scores absolute creates a linear relation between ss scores and individual grades on assignments with 0 being the best score and +1 being the worst score (whether because the writing is too complex or too simple). Thus a correlation of 100% between ss and grade would equal -1.

The correlations of grade with ss score were consistently greater for the "star" group than for the control group:

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Table III here

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For both groups, with twenty-two students each, a significant correlation (.05 level) between ss and grade would be .4 or above. Therefore, the "star" group had statistically significant correlation on assignments two, three and five. The control group showed no significant correlations between ss and grade. These figures suggest that students in the "star" group not only learned more about stylistic simplicity as a direct result of class activity, but that the correlation continued more predictably for them through all five assignments.

In this pilot study, several tentative conclusions suggest areas for future study. Use of the "star" program does seem to help students learn appropriate stylistic simplicity along with other qualities of good writing--if only by promoting greater sensitivity to implications of style. A previous study on the effect of "star" feedback for required rewriting suggested that "star" helped students move to a more appropriate stylistic level of complexity.[6] However, the nuisance factor in using "star" should be considered as an important factor limiting its usefulness. Therefore, it may be best to use "star" selectively--only when it's clear that gle will be especially useful as feedback.

One kind of student should clearly <u>not</u> use "star." Students with errors in punctuation and sentence structure will get misleading results because comma splices, fragments, run-on sentences and misuse

of semi-colons will artificially raise or lower gle.

But "star" may be useful as a rough indicator for students who consistently write too complexly or for students writing to an audience or for a purpose defined as low in gle.

In every case, however, students should receive an instructor's or peer's comments since the "star" program does not evaluate the quality of ideas, idiomatic usage, grammar, syntax or punctuation. Until a reliable, easily quantified formula can be devised which is more evaluative, the use of a readability formula in teaching appropriate stylistic simplicity must be carefully supported with expert, though non-quantified, evaluation.

FOOTNOTES

[1]Donna Stine and Donald Skarzenski, "Priorities for the Business Communications Classroom: A Survey of Business and Academe," Journal of Business Communication, 16, no. 3 (Spring 1979), 16.

[2]Rebecca Pressman, Legislative and Regulatory Progress on the Readability of Insurance Policies (Washington: Document Design Center, 1979).

[3]Reading ease has been translated into grade level equivalent. The Flesch Reading Ease formula is:

Reading Ease = 206.835 - 1.015 (times average number of words/sentence) - 84.6 (times average number of syllables/word)

as cited in George R. Klare, The Measurement of Readability (Ames, Iowa: Iowa State University Press, 1963), p. 59.

[4]E.D. Hirsch, Jr., The Philosophy of Composition (Chicago: University of Chicago Press, 1977), p. 78.

[5]Janice Redish, Readability (Washington: Document Design Center, 1979), p. 4.

[6]Helen J. Schwartz, "Fighting Gobbledegook in Technical Writing with Computer Magic: A Preliminary Study," paper presented at the annual meeting of the College English Association, Dearborn, MI, April 10-12, 1980. Available through ERIC.

	Regression Coefficient	t-ratio	Significance
Student gpa	.2233	2.48	<.01
"star" participation	.0782	.91	ns
ss1	-.053	-.23	ns
ss2	-.563	-2.14	<.025
ss3	-.491	-2.38	<.025
ss4	.194	.77	ns
ss5	-.167	-.64	ns

R-Squared = 50.6%, adjusted for degrees of freedom

Table I - Regression analysis of comprehensibility versus grade point average, "star" participation, and simplicity score for "star" and control groups (44 students)

	"STAR" GROUP (22 students)			CONTROL GROUP (22 students)		
	Regression Coefficient	t-ratio	Significance	Regression Coefficient	t-ratio	Significance
gpa	.255	1.62	<.10	.229	1.69	<.10
ss1	-.135	-.35	ns	.246	.48	ns
ss2	-.430	-.93	ns	-.714	-2.03	<.05
ss3	-.475	-1.54	<.10	.048	.10	ns
ss4	.720	1.67	ns	-.242	-.79	ns
ss5	-.720	-1.56	<.10	.162	.50	ns
	R-Squared = 59.0%, adjusted for degrees of freedom			R-Squared = 14.6%, adjusted for degrees of freedom		

Table II - Regression analysis for "star" group and for control group separately of comprehensibility versus grade point average and simplicity scale ratings

	Star	Control
Assignment 1	-.376	-.166
Assignment 2	-.673	-.347
Assignment 3	-.555	-.369
Assignment 4	-.092	-.064
Assignment 5	-.574	-.269

Table III - Correlation of grade with ss for "star" group and control group on five assignments